PUBLIC HEARING TO CONSIDER THE PROPOSED "LEV II" AND "CAP 2000" AMENDMENTS TO THE CALIFORNIA EXHAUST AND EVAPORATIVE EMISSION STANDARDS AND TEST PROCEDURES FOR PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES, AND TO THE EVAPORATIVE EMISSION REQUIREMENTS FOR HEAVY-DUTY VEHICLES

Staff's Suggested Changes to the Original Proposal

PRESENTED AT THE NOVEMBER 5, 1998 HEARING OF THE AIR RESOURCES BOARD

The following text contains staff's suggested modifications to the originally proposed regulatory text of the LEV II and CAP 2000 amendments. Unless otherwise indicated below, the suggested modifications are shown in underline to indicate additions to the originally proposed text, and ~~strikeout~~ to show deletions. Only those portions of the regulatory text that contain suggested modifications are shown. All proposed modifications will be made available to the public for a supplemental fifteen-day comment period prior to final adoption.

A. Modifications Pertaining to the LEV II Exhaust Emission Standards.

1. Modify the standards table in title 13, CCR, section 1961(a)(1), and Section E.1.1.2 of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," as follows:

Exhaust Mass Emission Standards for New 2004 and Subsequent Model TLEVs, LEVs, ULEVs, and SULEVs in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes

Vehicle Type	Durability Vehicle Basis (mi)	Vehicle Emission Category	NMOG (g/mi)	Carbon Monoxide (g/mi)	Oxides of Nitrogen (g/mi)	Formaldehyde (mg/mi)	Particulate from diesel vehicles (g/mi)
All PCs; LDTs <8,500 lbs. GVW Vehicles in this category are tested at their loaded vehicle weight.	50,000	TLEV	0.125	3.4	0.4	15	n/a
		LEV	0.075	3.4	0.05	15	n/a
		LEV, Option 1	0.075	3.4	0.07	15	n/a
		ULEV	0.040	1.7	0.05	8	n/a
	120,000	TLEV	0.156	4.2	0.6	18	0.04
		LEV	0.090	4.2	0.07	18	0.01
		LEV, Option 1	~~0.075~~ 0.090	~~3.4~~ 4.2	~~0.09~~ 0.10	~~15~~ 18	n/a
		ULEV	0.055	2.1	0.07	11	0.01
		SULEV	0.010	1.0	0.02	4	0.01
	150,000 (Optional)	TLEV	0.156	4.2	0.6	18	0.04
		TLEV, Option 1 2004 - 2006	0.125	~~3.4~~ 4.2	0.5	~~15~~ 18	~~n/a~~ 0.04*
		TLEV, Option 1 2007+	0.09	4.2	0.3	18	0.03
		LEV	0.090	4.2	0.07	18	0.01
		LEV, Option 1	~~0.075~~ 0.090	~~3.4~~ 4.2	~~0.09~~ 0.10	~~15~~ 18	n/a
		ULEV	0.055	2.1	0.07	11	0.01
		SULEV	0.010	1.0	0.02	4	0.01

* Nonsulfate particulate matter

The division of the 150,000 mile Option 1 TLEV standards into separate 2004-2006 and 2007 and subsequent model year categories, and the revised NOx and diesel particulate standards for these categories, respond to concerns regarding the long-term impact of NOx and particulate emissions from diesel vehicles — the vehicles expected to use the option. In staff's original proposal, the LEV II NOx standard for 150,000 mile Option 1 TLEVs was 0.5 g/mi for 2004 and subsequent model years, and the diesel particulate standard was 0.04 g/mi (although this particulate standard was shown in the standards table in the Staff Report, it was mistakenly omitted from the standards tables in the text of the regulations and test procedures). Staff is now recommending that more stringent technology-forcing NOx and particulate standards of 0.3 and 0.03 g/mi respectively apply for the 2007 and subsequent model years, in order to stimulate the development of aftertreatment technologies that hold long-term promise for diesel vehicles in all weight classifications. To facilitate transition to these more stringent long-term standards, the 2004 - 2006 model year 0.04 g/mi diesel particulate standard for option 1 TLEVs would exclude sulfates.

The modifications to the standards for LEVs, and to the CO standard for 150,000 mile Option 1 TLEVs, correct errors in the originally proposed regulatory text to reflect the staff's initial intent. The correct proposed standards were shown on pages II-7 and II-8 of the Staff Report: Initial Statement of Reasons.

2. Modify title 13, CCR, section 1961(a)(1), and section E.4.3 of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," as follows:

(10) [or E.4.3] *Intermediate In-Use Compliance Standards*. ~~Prior to the~~ For the 2004 through 2006 model years, the following intermediate in-use compliance standards shall apply for the first two model years after introduction of a test group to a new standard. For SULEVs certified prior to the 2004 model year, the following intermediate in-use compliance SULEV standards shall apply through the 2006 model year.

Emission Category	Durability Vehicle Basis	LEV II PCs and LDTs		LEV II MDVs 8500 - 10,000 lbs. GVW
		NMOG	NOx	NOx
LEV/ULEV	50,000	n/a	0.07	n/a
	120,000	n/a	0.10	0.3
SULEV	120,000	0.02	0.03	0.15

This modification is to provide SULEVs that are introduced prior to the 2004 model year with an additional compliance margin for early introduction of this emission category.

3. Add the following language as title 13, CCR, section 1961(a)(13), and section E.1.11 of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles":

(a)(13)[or E.1.11] *NOx Credits for Pre-2004 MDVs Certified to the LEV II LEV or ULEV Standards.* Prior to the 2004 model year, a manufacturer may earn a 0.02 g/mi per vehicle NOx credit for MDVs between 6,000-8500 lbs. GVW certified to the LEV II LEV or ULEV standards for PCs and LDTs set forth in section 1960.1(g)(1) [or section E.1.1.1 of these test procedures]. The manufacturer may apply the credit on a per vehicle basis to the NOx emissions of LDTs between 6,000-8500 lbs. GVW certified to the PC/LDT LEV or ULEV standards in section 1960.1(a)(1) [or section E.1.1.2] for the 2004 through 2008 model years.

This modification is being proposed to provide manufacturers with credit for the early introduction of larger truck and sport utility vehicles meeting a 0.2 g/mi NOx emission level. This credit can be used in the 2004-2008 model years on like vehicles certifying to the 0.05 LEV and ULEV NOx standards.

4. (a) Modify title 13, CCR, section 1961(a)(11) as follows:

(11) *NMOG Credit for Vehicles with Zero-Evaporative Emissions.* In determining compliance of a vehicle with the applicable exhaust NMOG standard, ~~an 0.006 g/mi NMOG value~~ a gram per mile NMOG factor, to be determined by the Executive Officer based on available data, shall be subtracted from the reactivity-adjusted NMOG exhaust emission results for any vehicle that has been certified to the "zero" evaporative emission standard set forth in title 13, CCR, section 1976(b)(1)(E). This credit shall not apply to a SULEV that generates a partial ZEV allowance.

(b) Modify section E.1.9 of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," as follows:

1.9 NMOG Credit for Vehicles with Zero-Evaporative Emissions. ~~A manufacturer that certifies to the "zero" evaporative emission standard set forth in title 13, CCR section 1976(b)(1)(E) shall be eligible to receive an 0.006 g/mi NMOG credit to be subtracted from the reactivity-adjusted NMOG exhaust mass emission certification level to demonstrate compliance with the standard. This credit shall not apply to SULEVs eligible to receive a partial ZEV allowance.~~ In determining compliance of a vehicle with the applicable exhaust NMOG standard, a gram per mile NMOG factor, to be determined by the Executive Officer based on available data, shall be subtracted from the reactivity-adjusted NMOG exhaust emission results for any vehicle that has been certified to the "zero" evaporative emission standard set forth in title 13, CCR, section 1976(b)(1)(E). This credit shall not apply to a SULEV that generates a partial ZEV allowance.

A modification is proposed because subsequent analysis revealed that the original proposed NMOG credit value overestimated the g/mi NMOG from evaporative emissions. Pursuant to the modified language, the Executive Officer will identify the appropriate gram per mile NMOG factor based on available data. To correct an oversight, additional modifications to the language in the test procedures are proposed to make it parallel to the language in section 1961(a)(11); this has no substantive effect.

5. (a) Delete title 13, CCR, section 1961(c)(1)(B) and section E.3.1.2 of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," as follows:

~~(B)~~ [or ~~3.1.2~~] ~~For 2004 through 2006 model years, a manufacturer shall equalize emission debits within three model years and prior to the end of the 2007 model year by earning g/mi NMOG emission credits in an amount equal to the g/mi NMOG debits, or by submitting a commensurate amount of g/mi NMOG credits to the Executive Officer that were earned previously or acquired from another manufacturer. For 2007 and subsequent model years, manufacturers shall equalize emission debits by the following model year.~~

(b) Replace the first sentence of title 13, CCR, section 1961(c)(3)(A), and of section E.3.3.1 of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," as follows:

(A) [or 3.3.1] A manufacturer shall equalize emission debits by earning g/mi NMOG emission credits or VECs in an amount equal to the g/mi NMOG debits or VEDs, or by submitting a commensurate amount of g/mi NMOG credits or VECs to the Executive Officer that were earned previously or acquired from another manufacturer. For 2001 *[added in test procedures only]* through 2003 and for 2007 and subsequent model years, manufacturers shall equalize emission debits by the following model year. For 2004 through 2006 model years, a manufacturer shall equalize NMOG debits for PCs and LDTs within three model years and prior to the end of the 2007 model year, and shall equalize VEDs for MDVs by the following model year. *[The rest of the paragraph would be unchanged]*

These modifications consolidate the provisions on equalizing emission debits and specify the requirements for equalizing VEDs for MDVs accrued in the 2004 through 2006 model years.

B. Modifications to the LEV II Evaporative Emission Standards

1. Modify title 13, CCR, section 1976(b)(1)(E) and section I.E.1.(c) of the proposed new "California Evaporative Emissions Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," as follows:

The optional zero-fuel evaporative emission standards for the three-day and two-day diurnal-plus-hot-soak tests are 0.35 grams per test for passenger cars, 0.50 grams per test for light-duty trucks under 6,000 lbs. GVWR, and 0.75 grams per test for light-duty trucks from 6,001 to 8,500 lbs. GVWR, to account for vehicle non-fuel evaporative emissions (resulting from paints, upholstery, tires, and other vehicle sources). Vehicles demonstrating compliance with the "zero" evaporative emission standards shall have zero (0.0) grams of fuel evaporative emissions. The manufacturer shall submit for advance Executive Officer approval a test plan to demonstrate that the vehicle has zero fuel evaporative emissions throughout its useful life.

Additionally, in the case of a SULEV vehicle for which a manufacturer is seeking a partial ZEV credit, the manufacturer may prior to certification elect to have measured fuel evaporative emissions reduced by a specified value in all certification and in-use testing of the vehicle as long as measured mass exhaust emissions of NMOG for the vehicle are increased in all certification and in-use testing. The measured fuel evaporative emissions shall be reduced in increments of 0.1 gram per test, and the measured mass exhaust emissions of NMOG from the vehicle shall be increased by a gram per mile factor, to be determined by the Executive Officer, for every 0.1 gram per test by which the measured fuel evaporative emissions are reduced. For the purpose of this calculation, the evaporative emissions shall be measured, in grams per test, to a minimum of three significant figures.

This modification is proposed in order to allow regulatory flexibility in the certification of SULEV vehicles for which partial ZEVs credits are desired. Trading of exhaust hydrocarbon emissions compliance margin to cover shortfalls in evaporative emissions control will provide this flexibility.

2. Modify title 13, CCR, section 1976(b)(1)(F) note (4), and section I.E.1.(d) note (2) of the proposed new "California Evaporative Emissions Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," as follows:

(4) [or (2)] In-use compliance whole vehicle testing shall not begin until the motor vehicle is at least one year from the production date and has accumulated a minimum of 10,000 miles. Prior to the 2006 model year, in-use compliance standards of 1.75 times the "Three-Day Diurnal + Hot-Soak" and "Two-Day Diurnal + Hot-Soak" gram per test standards shall apply for only the first three model years after introduction of an evaporative family to a new standard.

This modification is proposed to reduce a manufacturer's in-use compliance risk during the introduction of the more stringent evaporative emission controls. This

provision will provide manufacturers the ability to make small vehicle adjustments for unanticipated problems encountered in the field during the first three years of the new evaporative family introduction.

3. Modify the standards table in title 13, CCR, section 1976(b)(1(F) and in section I.E.1.(d) of the proposed new "California Evaporative Emissions Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," to change "under 6,000 lbs. GVWR" to "~~under~~ 6,000 lbs. GVWR and under".

This modification assures that there is a standard applicable to 6000 lb. GVWR light-duty trucks.

C. Modifications to the CAP 2000 Provisions

1. Modify section D.1(f) of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" as follows:

(f) ~~through~~ Altitude Requirements. Delete and replace with:

Altitude Requirements. Except for supplemental exhaust emission standards (which apply only at low altitude conditions), all emission standards apply at low altitude conditions and only CO emission standards apply at high altitude conditions.

(g) [No change.]

This modification is proposed to conform with section G.3. (p. G-1) of the originally proposed test procedures document, under which the California high altitude requirements only apply to carbon monoxide emissions.

2. Add the following language at the end of section A.1 of the "California Assembly-Line Test Procedures for 2001 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles":

These test procedures also apply to any 2000 model-year vehicle that a manufacturer elects to make subject to 40 CFR, part 86, subpart S in lieu of subpart A.

This modification corrects an oversight in the original proposal. Since 40 CFR section 86.1801-01(c)(2) allows a manufacturer to elect to use subpart S in lieu of subpart A for any 2000 model-year vehicles, it is appropriate for any such vehicles to be subject to the new assembly-line test procedures designed to be used in conjunction with subpart S.

3. Modify section I.A. of the proposed new "California Evaporative Emissions Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," as follows:

A. 40 CFR §86.1801-~~00~~ 01 Applicability.

This modification corrects the CFR reference from §86.1801-00 to §86.1801-01.

D. Modifications Pertaining to Hybrid-Electric Vehicles

1. Modify section III.D.1. of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as follows:

1. General Requirements

The following language shall be applicable in lieu of 40 CFR §86.130-78:

The test sequence shown in Figure 2 (Figure 3A or 3B for hybrid electric vehicles) describes the steps encountered as the vehicle undergoes the three-day diurnal sequence and the supplemental two-day diurnal sequence to determine conformity with the standards set forth. Methanol measurements may be omitted when methanol-fueled vehicles will not be tested in the evaporative enclosure. Ambient temperature levels encountered by the test vehicle throughout the entire duration of this test sequence shall not be less than 68°F nor more than 86°F, unless otherwise specified. The temperatures monitored during testing shall be representative of those experienced by the test vehicle. The test vehicle shall be approximately level during all phases of the test sequence to prevent abnormal fuel distribution. The temperature tolerance of a soak period may be waived for up to 10 minutes to allow purging of the enclosure or transporting the vehicle into the enclosure.

If tests are invalidated after collection of emission data from previous test segments, the test may be repeated to collect only those data points needed to complete emission measurements. Compliance with emission standards may be determined by combining emission measurements from these different test runs. If any emission measurements are repeated, the new measurements supersede previous values.

The three-day diurnal test sequence shown in Figure 2 (and Figure 3A or 3B for hybrid electric vehicles) is briefly described as follows:

This modification clarifies the originally proposed text.

2. Modify section III.D.1.1. of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as follows:

1.1. The fuel tank shall be drained and filled to the prescribed tank fuel volume, as specified in 40 CFR §86.1803-01, in preparation for the vehicle preconditioning. For hybrid electric vehicles only, the manufacturer may elect to perform the All-Electric Range Test pursuant to the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2001~~+~~3 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference herein prior to fuel drain and fill.

This modification corrects a typographical error.

3. Modify section III.D.1.7 of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as follows:

1.7. Perform exhaust emission tests in accordance with procedures as provided in "California Exhaust Emission Standards and Test Procedures for 200~~1~~3 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles," and these procedures.

This modification corrects a typographical error.

4. Add section III.D.1.7.1 to the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as follows:

1.7.1 For hybrid electric vehicles, a four phase exhaust test shall be performed as shown in Figure 3A pursuant to the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference herein. Following the four phase exhaust test, the test sequence shall repeat from step 1.3 of this section to conduct the evaporative test using the standard cold start test and hot start test (standard three phase test) without emission sampling. Battery state-of-charge setting prior to the standard three phase test shall be performed pursuant to section 6.1.6 of the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference herein. Four phase exhaust testing may be performed in conjunction with evaporative testing as shown in Figure 3B with advance Executive Order approval if the manufacturer is able to provide data demonstrating compliance with evaporative testing using the standard three phase test.

This text would be added to retain evaporative emission testing stringency by separating the four phase hybrid electric vehicle exhaust emission test from the evaporative emission test that requires a three phase test.

5. Modify section III.D.1.1. of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as follows:

The supplemental two-day diurnal sequence in Figure 2 (and Figure 3A or 3B for hybrid electric vehicles) shall be conducted according to the steps described in 1.1 through 1.4, 1.6, 1.7, followed by 1.10 through 1.12 of this paragraph except that the ambient temperature of the hot soak test is conducted at an ambient temperature between 68°F and 86°F at all times and that the diurnal test will consist of a two-day test.

This text would be modified to clarify the requirements.

6. Modify section III.D.3.1. of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as follows:

3. Vehicle Preconditioning

~~3.1 Amend paragraph 40 CFR §86.132-90 by adding the following subparagraph (a)(2)(i) which reads:~~

This text would be struck to correct an oversight in the original text.

7. Add section III.D.3.1. and delete sections III.D.3.1.1. through III.D.3.1.7. to the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," as follows:

3.1 For supplemental vehicle preconditioning requirements for hybrid electric vehicles, refer to the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference herein.

~~3.1.1 For hybrid electric vehicles, battery state-of-charge shall be set prior to fuel drain and fill.~~

~~3.1.2 For hybrid electric vehicles that do not allow manual activation of the auxiliary power unit, battery state-of-charge shall be set at a level that causes the hybrid electric vehicle to operate the auxiliary power unit for the maximum possible cumulative amount of time during the preconditioning drive.~~

~~3.1.3 For hybrid electric vehicles that allow manual activation of the auxiliary power unit, battery state-of-charge shall be set at a level that satisfies one of the following conditions:~~

~~(i) If the hybrid electric vehicle is charge-sustaining over the UDDS, battery state-of-charge shall be set at the lowest level allowed by the manufacturer.~~

~~(ii) If the hybrid electric vehicle is charge-depleting over the UDDS, battery state-of-charge shall be set at the level recommended by the manufacturer for activating the auxiliary power unit when operating in urban driving conditions.~~

~~3.1.4 After setting battery state-of-charge, the hybrid electric vehicle shall be pushed or towed to a work area for fuel drain and fill according to section D.1. of these procedures.~~

~~3.1.5 Following fuel drain and fill, the vehicle shall be pushed or towed into~~

~~position on a dynamometer and preconditioned. If the auxiliary power unit is capable of being manually activated, the auxiliary power unit shall be manually activated at the beginning of and operated throughout the preconditioning drive.~~

~~3.1.6 Within five minutes of completing preconditioning drive, battery state-of-charge shall be set at a level that satisfies one of the following conditions:~~

~~(i) If the hybrid electric vehicle does not allow manual activation of the auxiliary power unit and is charge-sustaining over the UDDS, then set battery state-of-charge to a level such that the SOC Criterion (see section B., Definitions, "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles") would be satisfied for the dynamometer procedure (section D.4. of these procedures). If off-vehicle charging is required to increase battery state-of-charge for proper setting, off-vehicle charging shall occur during soak period prior to exhaust emission test.~~

~~(ii) If the hybrid electric vehicle does not allow manual activation of the auxiliary power unit and is charge-depleting over the UDDS, then no battery state-of-charge adjustment is permissible.~~

~~(iii) If the hybrid electric vehicle does allow manual activation of the auxiliary power unit, then set battery state-of-charge to manufacturer recommended level for activating the auxiliary power unit when the hybrid electric vehicle is operating in urban driving conditions.~~

This text would be modified to relocate vehicle preconditioning requirements from the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" to the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles."

8. Modify section III.D.3.3.1. of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as follows:

3.3.1 Within five minutes of completion of preconditioning, the vehicle shall be driven off the dynamometer to a work area. For hybrid electric vehicles <u>following battery state-of-charge setting</u>, the vehicle shall <u>only</u> be pushed <u>or towed</u> ~~off the dynamometer to a work area~~ to avoid disturbing battery state-of-charge setting.

These modifications clarify vehicle movement requirements for hybrid electric vehicles.

9. Modify sections III.D.4. and III.D.6. of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as follows:

4. Dynamometer Procedure.

To be conducted according to 40 CFR §86.135-90. For hybrid electric vehicles, the dynamometer procedure shall be performed pursuant to the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 200~~1~~3 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference herein.

6. Dynamometer Test Run, Gaseous and Particulate Emissions~~.~~

To be conducted according to 40 CFR §86.137-90. For hybrid electric vehicles, the dynamometer test run, gaseous and particulate emissions shall be performed pursuant to the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 200~~1~~3 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" as incorporated by reference herein.

This modification corrects a typographical error.

10. Modify section 6.1 of the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" as follows:

6.1 Vehicle Preconditioning

To be conducted pursuant to the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as incorporated by reference herein with the following supplemental requirements:

6.1.1 Battery state-of-charge shall be set prior to initial fuel drain and fill before vehicle preconditioning.

6.1.2 For hybrid electric vehicles that do not allow manual activation of the auxiliary power unit, battery state-of-charge shall be set at a level that causes the hybrid electric vehicle to operate the auxiliary power unit for the maximum possible cumulative amount of time during the preconditioning drive.

6.1.3 For hybrid electric vehicles that allow manual activation of the auxiliary power unit, battery state-of-charge shall be set at a level that satisfies one of the following conditions:

(i) If the hybrid electric vehicle is charge-sustaining over the UDDS, battery

state-of-charge shall be set at the lowest level allowed by the manufacturer.

(ii) If the hybrid electric vehicle is charge-depleting over the UDDS, battery state-of-charge shall be set at the level recommended by the manufacturer for activating the auxiliary power unit when operating in urban driving conditions.

6.1.4 After setting battery state-of-charge, the hybrid electric vehicle shall be pushed or towed to a work area for fuel drain and fill according to sections D.1.1. and D.1.2. of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as incorporated by reference herein.

6.1.5 Following fuel drain and fill, the vehicle shall be pushed or towed into position on a dynamometer and preconditioned. If the auxiliary power unit is capable of being manually activated, the auxiliary power unit shall be manually activated at the beginning of and operated throughout the preconditioning drive.

6.1.6 Within five minutes of completing preconditioning drive, battery state-of-charge shall be set at a level that satisfies one of the following conditions:

(i) If the hybrid electric vehicle does not allow manual activation of the auxiliary power unit and is charge-sustaining over the UDDS, then set battery state-of-charge to a level such that the SOC Criterion (see section B., Definitions, of these procedures) would be satisfied for the dynamometer procedure (section 6.2 of these procedures). If off-vehicle charging is required to increase battery state-of-charge for proper setting, off-vehicle charging shall occur during 12 to 36 hour soak period.

(ii) If the hybrid electric vehicle does not allow manual activation of the auxiliary power unit and is charge-depleting over the UDDS, then no battery state-of-charge adjustment is permissible.

(iii) If the hybrid electric vehicle does allow manual activation of the auxiliary power unit, then set battery state-of-charge to manufacturer recommended level for activating the auxiliary power unit when the hybrid electric vehicle is operating in urban driving conditions.

This text would be transferred from section 3.1 of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" with some modifications for clarity.

11. Modify section 8.2.4 (i) and (ii) of the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" as follows:

(i) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-sustaining over the ~~HFEDS~~ USO6, the vehicle shall be momentarily turned off for 5 seconds and turned back on during the idle period. The battery state-of-charge shall be recorded after the hybrid electric vehicle has fully turned on.

(ii) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-depleting over the ~~HFEDS~~ USO6, the vehicle shall remain turned on during the idle period.

This modification corrects errors in the original proposal that cited the incorrect test cycle for this section.

12. Modify section 8.2.5(ii) of the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" as follows:

(ii) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-depleting over the ~~HFEDS~~ USO6, turn off vehicle 2 seconds after the end of the last deceleration.

This modification corrects an error in the original proposal that cited the incorrect test cycle for this section.

13. Modify section 8.4.6 of the "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" as follows:

8.4.6 Amend subparagraph (d)(10): At the conclusion of the ~~USO6~~ SCO3 emission test, one of the following conditions shall apply:

(i) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-sustaining over the SCO3, record the battery state-of-charge to determine if the SOC Criterion (see Definitions, section B of these procedures) is satisfied. If the SOC Criterion is not satisfied, then turn off cooling fan(s), allow vehicle to soak in the ambient conditions of paragraph (c)(5) of this section for 10 minutes, and repeat dynamometer test run from subparagraph (d). A total of three SCO3 emission tests shall be attempted to satisfy the SOC Criterion. Manufacturers may elect to repeat dynamometer test run from subparagraph (d) following a 10 minute soak in the ambient conditions of paragraph (c)(5) of this section if battery energy level increased significantly relative to the initial battery state-of-charge set at the beginning of SCO3 emission test.

(ii) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-depleting over the ~~HFEDS~~ SCO3, turn off vehicle 2 seconds after the end of the last deceleration.

This modification corrects an error in the original proposal that cited the incorrect test cycle for this section.

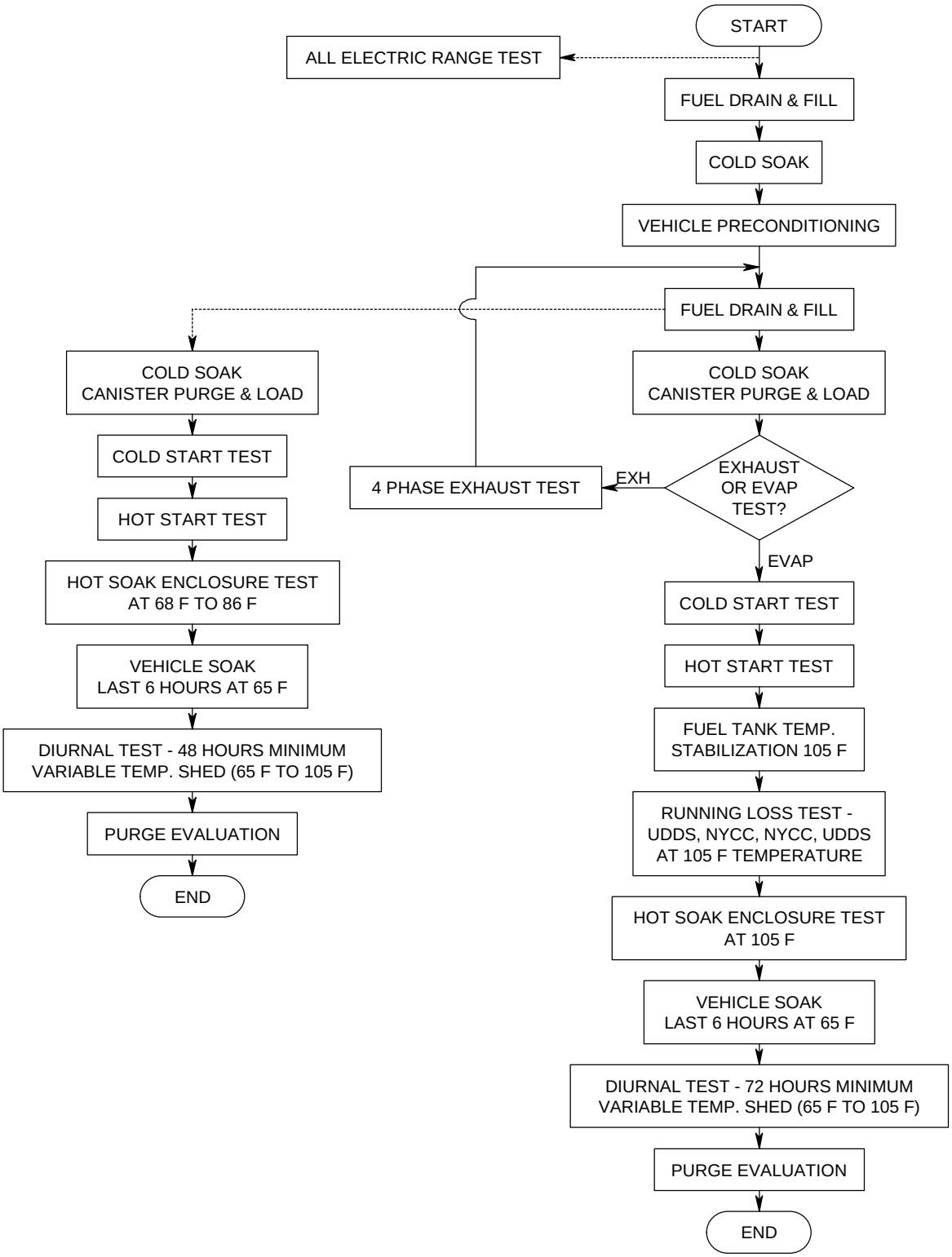

Figure 3A: Test Procedure for 2003 and Subsequent Hybrid Electric Vehicles

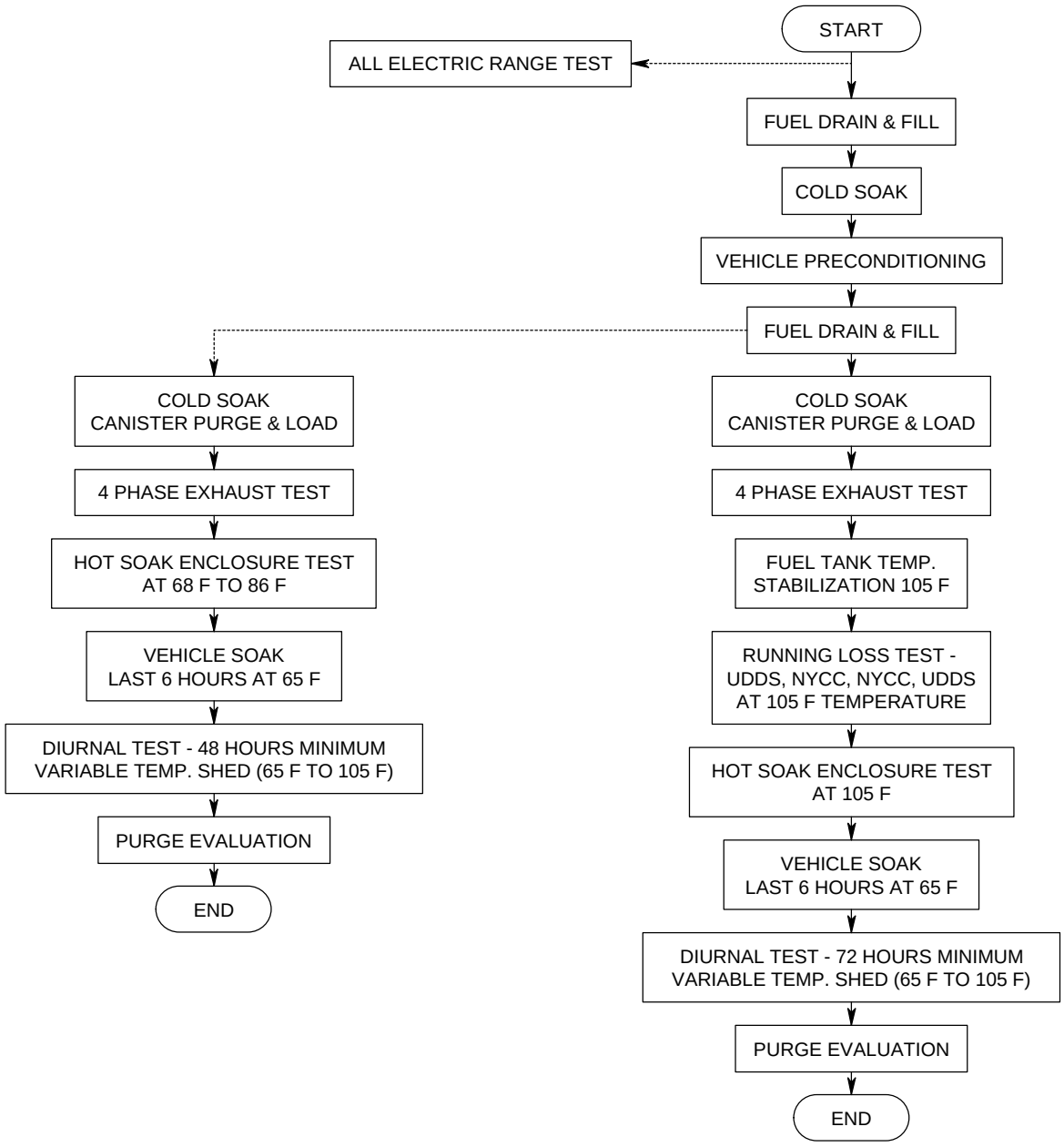

Figure 3B: Test Procedure for 2003 and Subsequent Hybrid Electric Vehicles